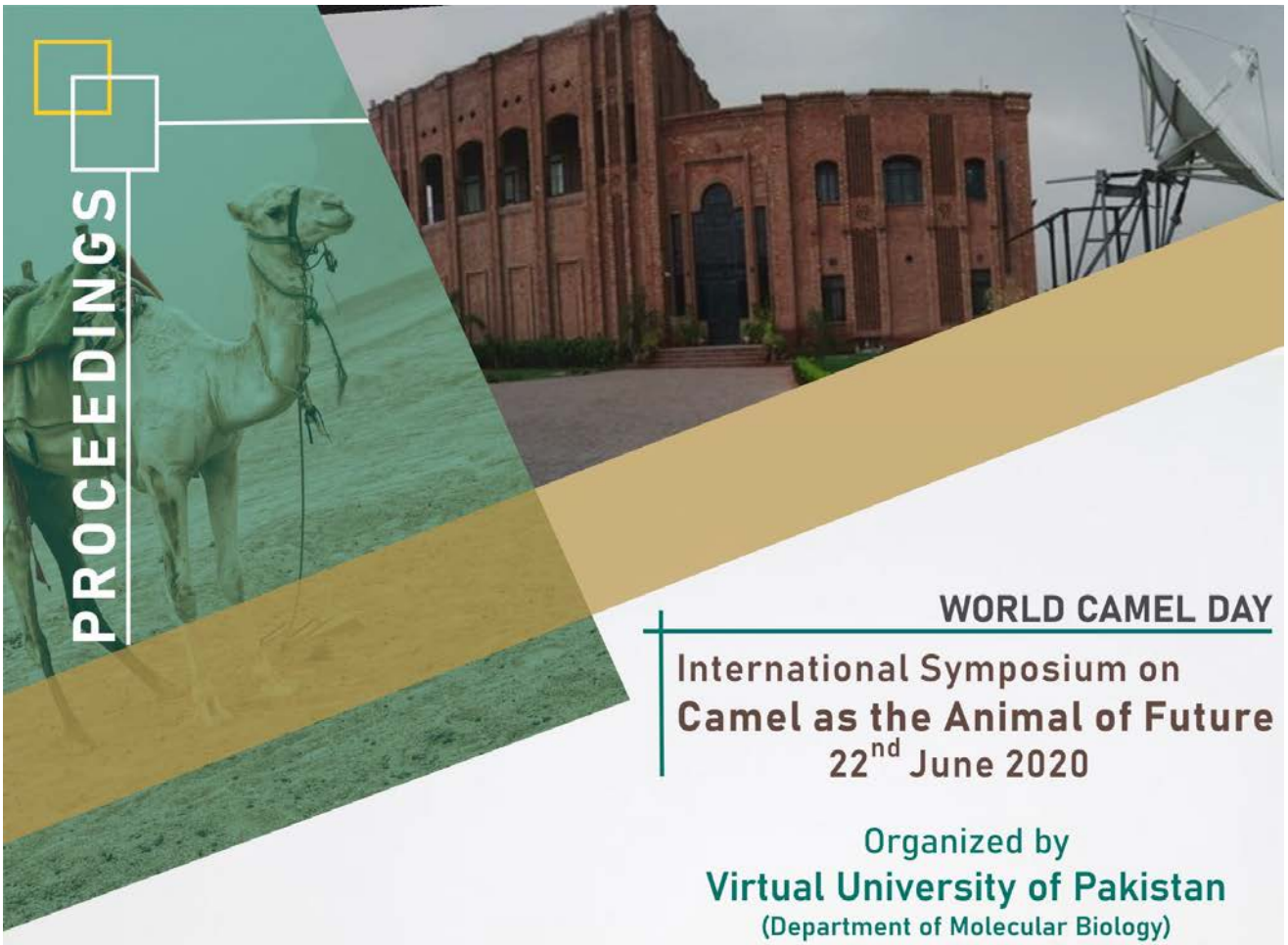

PROCEEDINGS

WORLD CAMEL DAY

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The assets of the camel and camel farming for the future

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Scenario for the future

The future world is faced to many challenges and constraints: social inequity, food safety and security, environmental preservation, biodiversity conservation, globalization of the economy and many others (see the abstract of Pr Al-Jassim). Especially, regarding the countries where camel rearing is an important part of the livestock economy, for those social, environmental, economic, or biological constraints, the camel could play a particular and original role. The question is "what it could be the interest to develop camel farming in the context of the future world?". For long time, regarded as" an animal of the past", with the decreasing use of camel as packing and pulling animal over the world, the assertion that the camel could be a chance for the future must be argued clearly. Camel scientists and developers must provide objective data to be able to affirm that camels can contribute to the resolution of the challenges facing humanity today. The camel as an animal of the future? All right, but why? How? On what biological, social, and economic bases?

Desertification combat

The camel is known as the most adapted domestic animal to desert conditions. Its contribution to combat desertification is based on its biology and behavior. Its legendary thirst resistance has two consequences: (i) the adaptation to water deficits, which makes the explain why it is one of the domestic species which did not leave its ecosystem of origin except for some import in Europe, North America and Australia; (ii) the camel being able to stay several days without drinking water, it can use rangelands far away from the water points, and thus decrease the pressure around them, contrary to cattle and small ruminants.

Its feeding behavior is also an asset for desertification combat. It is a browser able to graze a wide variety of plants leading to a lower pressure on the floristic biodiversity of the arid lands. Moreover, due to its long neck, it can graze at different levels in the pasture ecosystems, from grass to trees with a limited overgrazing. Thanks to its very flexible tongue, it can reach the leaves without damaging the branches. It practices an "ambulatory grazing, moving permanently, even in case of abundant grasses after a rain. Thus, it consumes few grasses in one place consequently, the carrying capacity of a camel herd is evenly distributed in grazing area.

Its digestive physiology and anatomical features are also an asset to survive in the desert: valorization of poor nutritive resources, high tolerance to salt and, consequently, ability to eat

halophyte plants often unpalatable for the other herbivores, high nitrogen recycling, slow transit and longer retention time of solid particles allowing to increase the feeding efficiency, digestibility of organic matter, and the germinating power of the seed transiting in camel gut. All these physiological features contribute for a better valorization of the arid lands

Food security and poverty alleviation

As multipurpose animal, the camel can provide milk, meat, wool, and power in harsh conditions, contributing to consider the desert also as a producing milieu. Camel farming allows maintaining rural activities in poor ecosystem and increasing agricultural activities in desert regions. The implementation of camel dairy farms around cities contributes to satisfy the growing urban demand for camel milk, especially as the productivity potential of camel seems higher than for local cow in similar climatic and feeding conditions. Despite of the marginal place of camel meat at world level, this production increased annually by 3% and contributes to a flourishing regional market. Moreover, extensive farming systems could guarantee the production of environment-friendly meat. However, the role of camel in the food security in desert is not limited to its zootechnical productivity, but is linked also with the ability of camel producers to market their produce on local, national or even international market.

Camel biodiversity

Camelid diversity can be defined as the variability of genes and breeds (genetic diversity), the diversity of camel products (processed milk and meat, wool, leather), and the types of farming systems. The lack of dominating genotypes (as Holstein for dairy cow) has avoided invading breed and maintained the genetic diversity of the species although the lack of selection leads to consider camel population as widely panmictic. But, at reverse, it could favor the selection of camel types for specific production contributing to a significant increase of milk and meat productivity. Recent research and technological progress conducted to wider types of camel products, both for milk and meat products (cheese, sausages….). All these productions can be ensured by different farming systems from pastoral areas to high-intensive farms. Gone are the days when the camel was part of a unique system, pastoral and mobile.

Camel as biological model for the future

Beyond their adaptive mechanisms, the camels have revealed certain peculiarities that question biologists because they can open perspectives both in terms of biomedical and industrial research. Three examples contributing to the renewal of research on the species can be emphasized: (i) the structural characteristics of immunoglobulins, (ii) the bioactive properties of camel lactoferrin, (iii) the health effect of a regular camel milk consumption.

Conclusion

The camel will not save our planet, but it could contribute to a better future for people living in remote places of the world and in other places. Beyond its lower contribution to the

greenhouse gas emission (see abstract of Pr Al-Jassim), these assets require a better attention from scientists and policymakers.